Book Catalogs versus Card Catalogs*

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ABSTRACT

The development of the library catalog in book form and its abandonment in favor of the card catalog are briefly traced. The advantages and disadvantages of both types of catalogs are enumerated, and several solutions which tried to combine the best features of both are discussed. The present trend back to the book catalog, made possible by recent advances in computer technology, is analyzed, advantages and disadvantages are compared, current examples are illustrated, and finally the computerized catalog is weighed against both the book and card catalog as to main features and practicality.

BOOK catalogs, contrary to the beliefs of many machine salesmen, are not an innovation in library technology. Although this fact can hardly be construed as news to librarians, it is surprising that the card catalog, for all practical purposes, is little more than seventy years old. In these seventy years it has proved its utility with such effectiveness that it has replaced the earlier book catalog and almost erased it from memory.

Libraries have existed from the civilizations of Mesopotamia and Egypt, and it is not unreasonable to suppose that these libraries had catalogs. In Mesopotamia, where the writing material was clay, the catalog might have been comprised of clay tablets, and, since the records would probably have filled several of them, one can imagine a series of tablets as the first card catalog. The techniques of this type of catalog, however, had to be reinvented thousands of years later, when the book catalog apparatus succumbed to its inherent problems.

Portability was not always a feature of early catalogs, and, although some librarians today complain of having to lift 7½ pound printed volumes, at least they are movable. In the temple libraries which existed at Karnak, Dendera, and Idfu, Dr. Dorothy Schullian has written that "incised on the walls . . . is a full catalogue of all the hieratical works which that library contained" (1). Surely the weight of a 7½ pound volume is preferable to the immobility of a stone wall. Even our present

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card catalogs are more mobile than that, for one can easily transport a single tray comfortably within the confines of the library.

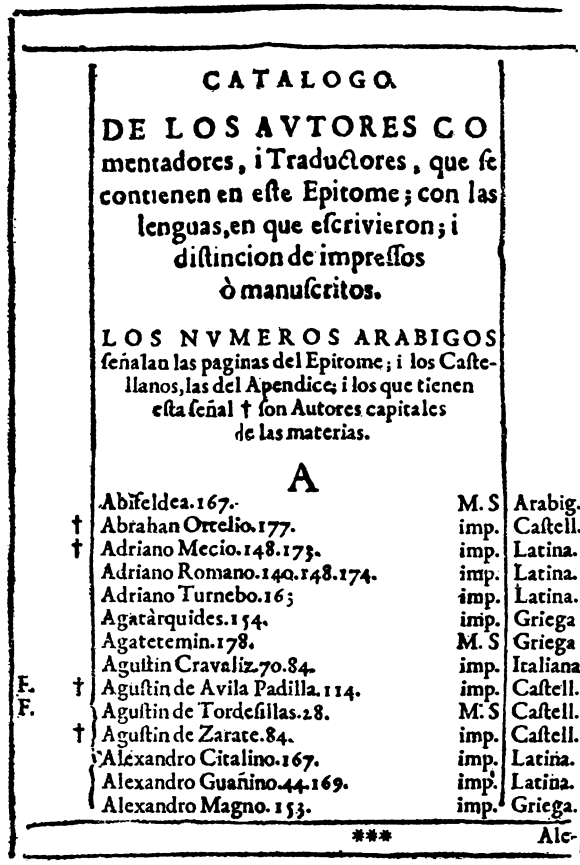
The next type of catalog was probably the scroll. Its main disadvantage was likely to have been its tendency to reroll itself while the user was making his bibliographic notes, a situation somewhat akin to Alice at the Queen's croquet party, attempting to play the game with a flamingo mallet.

The scroll gave way to the codex, and the book, as we are familiar with it, came into being. Large private libraries were amassed in monasteries and palaces, as well as by individuals, and these were often housed in elaborate, if not sumptuous, rooms. As libraries grew larger, and as scientific publication began to increase, the need for bibliographic control was obvious. In the library it was met by the book catalog and in scientific publishing by the index and, soon after, the abstract.

Then, as now, the production of a catalog presented various problems, not the least of which was the mode of arrangement. Fortunately, we do not have to deal with those complexities in detail. Suffice it to say that there were catalogs published which were arranged by author, such as Pinelo's catalog of the first library dealing with the literature of the Americas (see Fig. 1), and chronologically by the date of the subject matter, rather than by publication date, such as the *Primordia* of Bishop White Kennett, a catalog of the first library assembled of works on America written in English (see Fig. 2). The index to this volume is interesting in that it includes both subjects and authors and thereby prefigures the dictionary catalog. Book catalogs were also arranged by title, by subject, by donor, by size, by accession date, and so on.

All of these catalogs had the same basic goal: to provide the owner or user with information as to what was available and where it could be found. The form of the early catalog does not seem to have been in doubt; a manuscript catalog, with space provided for interlineation, was adequate for libraries because they were not of great size. The manuscript catalog of the Library of the Surgeon General's Office, dated 1840, (see Fig. 3) was probably as typical as any. It was small enough to be recopied, perhaps annually, to include new accessions. How different the situation had become by the 1870's, when that library was forced to undertake its first printed catalog (in three volumes), to be followed later by the monumental *Index Catalogue!*

As libraries began to grow ever more rapidly, the need for a better solution was imperative, and that solution was eventually found in the card catalog. One major factor in its successful substitution for the book catalog was the changing technology of the times, as represented by the



CATALOGO

DE LOS AVTORES COmentadores, i Traductores, que ſe contienen en eſte Epitome; con las lenguas, en que eſcrivieron; i diſtincion de impreſſos ò manuſcritos.

LOS NVMEROS ARABIGOS ſeñalan las paginas del Epitome; i los Caſtellanos, las del Apendice; i los que tienen eſta ſeñal † ſon Autores capitales de las materias.

A

		Abiſeldea.167.	M. S	Arabig.
	†	Abrahan Ortelio.177.	imp.	Caſtell.
	†	Adriano Mecio.148.173.	imp.	Latina.
		Adriano Romano.140.148.174.	imp.	Latina.
		Adriano Turnebo.165	imp.	Latina.
		Agatàrquides.154.	imp.	Griega
		Agatetemin.178.	M. S	Griega
		Aguſtin Cravaliz.70.84.	imp.	Italiana
F.	†	Aguſtin de Avila Padilla.114.	imp.	Caſtell.
F.		Aguſtin de Tordeſillas.28.	M. S	Caſtell.
	†	Aguſtin de Zarate.84.	imp.	Caſtell.
		Alexandro Citalino.167.	imp.	Latina.
		Alexandro Guañino.44.169.	imp.	Latina.
		Alexandro Magno.153.	imp.	Griega.

*** Ale-

FIG. 1.—A Page from *El Epitome de Pinelo, Primera Bibliografia del Nuevo Mundo.* Information about language is given, as well as a note which indicates if the work is in manuscript or is printed.

invention of the typewriter and its ultimate, though grudging, acceptance as a library tool.

We have thus reached the point where we must analyze the good and bad features of book and card catalogs. Among the advantages of the book catalog, the ability to make multiple copies is an indisputable one. We mean the printed book catalog, since making multiple copies of manuscript catalogs is an impractical task (print is, of course, more readable than manuscript, even that wonderful creation, library hand). Since the expense of publication lies mainly in typesetting, etc., little additional cost is added when printing 100 copies rather than 25. On the printed page, furthermore, we have the ability to scan numerous

A Defence againſt the Scots *Abdicating* DARIEN, including an *Anſwer* to the *Defence of the* Scots *Settlement* there. *Authore* Britanno *ſed* Dunenſi. Printed in the Year 1700. 8vo. *p.* 168.

A ſhort Vindication of *Phil. Scot's* Defence of the *Scots* abdicating *DARIEN*. Being in Anſwer to the Challenge of the Author of *The Defence* of that Settlement, to prove the *Spaniſh* Title to *Darien*, by Inheritance, Marriage, Donation, *&c.* With a Prefatory Reply to the falſe and ſcurrilous Aſperſions of the new Author of *The Juſt and Modeſt Vindication*, &c. And ſome Animadverſions on the material Part of it, relating to the Title of *Darien*. *London*, Printed in the Year 1701. 8vo. *p.* 48. [See more on this Subject under the Years 1697, 98, and 1701.]

A Trumpet Sounded out of the Wilderneſs of *America*, which may ſerve as a Warning to the Government and People of *England* to beware of QUAKERISM. Wherein is ſhewed how in *PENSILVANIA*, and there away, where they have the Government in their own Hands, they hire and encourage Men to *Fight*; and how they *Perſecute*, *Fine*, and *Impriſon*, and take away Good for Conſcience ſake. By *Daniel Leeds*. Printed by *William Bradford*, at the *Bible* in *New-York*. 1699. 8vo. *p.* 151.

A Paper to *William Penn*, at the departure of that Gentleman to his Territory for his Peruſal in *PENSILVANIA*. Wherein two Points are propoſed to him concerning the *Quakers* Religion, that he may receive himſelf Conviction, or render to others that are Conſcientious about them, Chriſtian Satisfaction; The one is their Belief of an *Infallible Guidance*: The other is their Diſuſe of the two Holy and Bleſſed *Sacraments*. With an occaſional Diſſertation concerning Predeſtination, or God's Decree about ſaving Men, in reference to the Doctrine of others, and not the *Quakers* only. By a Friend unknown. *London*, Printed for *H. Mortlock*. 1700. 4to. *p.* 24.

The Order of the Goſpel Profeſſed and Practiſed by the Churches of Chriſt in *NEW-ENGLAND*, Juſtified by the Scripture, and by the Writings of many Learned Men, both Antient and Modern Divines, in Anſwer to ſeveral Queſtions relating to Church-Diſcipline. By *Increaſe Mather*, Preſident of *Harward Colledge* in *Cambridge*, and Teacher of a Church at *Boſton* in *New-England*. Re-printed at *London*, and ſold by *A. Baldwin*. 1700. 8vo. *p.*

More Wonders of the Inviſible World. Or the Wonders of the Inviſible World diſplay'd in five Parts. Part I. An Account of the Sufferings of *Margaret*

FIG. 2.—A page from the *Bibliothecae Americanae Primordia*, the first English bibliography on America, compiled by Bishop White Kennett. The interesting arrangement of this work was in the main chronological. The guiding principle was not, however, publication date, but rather the major time period with which a work dealt. In this example, the year 1699 ties all these works together, even though publication dates are later.

entries; consequently, we can browse easily. But there are even more cogent points. The catalog does not need to remain only in the library, but can be widely disseminated to other libraries or individuals, a most attractive feature in the areas of scholarship and research. The books which comprise the catalog occupy considerably less floor space than the same catalog in card form and, of course, need no special and expensive cabinets to house them. In addition, possible inaccuracies can be spotted

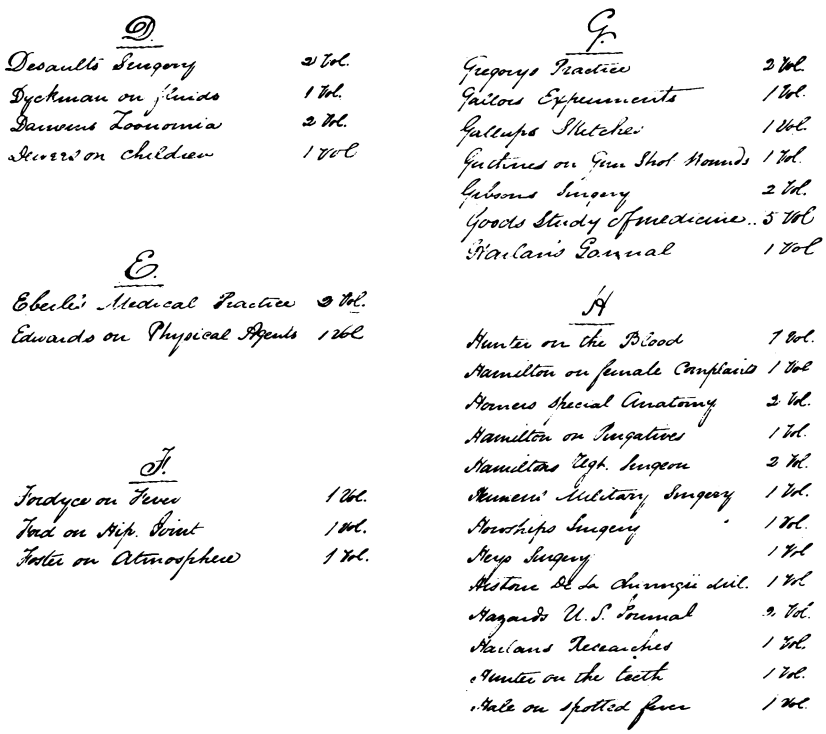

D.
Desault's Surgery 2 Vol.
Dyckman on Fluids 1 Vol.
Darwins Zoonomia 2 Vol.
Deers on Children 1 Vol
E.
Eberle's Medical Practice 3 Vol.
Edwards on Physical Agents 1 Vol
F.
Fordyce on Fever 1 Vol.
Ford on Hip. Joint 1 Vol.
Foster on Atmosphere 1 Vol.
G.
Gregorys Practice 2 Vol.
Gaitors Experiments 1 Vol.
Gallups Sketches 1 Vol.
Gutchins on Gun Shot Wounds 1 Vol.
Gibsons Surgery 2 Vol.
Goods Study of Medicine.. 5 Vol
Harlans Journal 1 Vol
H.
Hunter on the Blood 1 Vol.
Hamilton on female Complaints 1 Vol
Homers Special Anatomy 2 Vol.
Hamilton on Purgatives 1 Vol.
Hamiltons Eight Surgeon 2 Vol.
Hunters' Military Surgery 1 Vol.
Hawkins Surgery 1 Vol.
Heys Surgery 1 Vol
Histoire de la chirurgie chil. 1 Vol
Hazards U.S. Journal 2 Vol.
Harlans Researches 1 Vol.
Hunter on the teeth 1 Vol.
Hale on spotted fever 1 Vol.

FIG. 3.—An illustration from *A Catalogue of Books in the Library of the Surgeon General's Office.* A more traditional arrangement (according to present standards) than in Figure 2, although "books" is slightly misleading, as journal volumes are also included.

more easily in a book catalog; this capability is especially advantageous when one considers modern book catalogs produced from cards. In this age of Xerography, it is a great help to be able to photocopy any section of the book catalog which contains desired material and make notes and comments. One more advantage is that which occurs when any work is produced for print. An author is apt to be careful and ruthless in editing away unnecessary information in this process, but the same restraint is not always evident in the production of a card catalog.

There are, nevertheless, major disadvantages in book catalogs. The cost of production is high, and, more important, the catalog is out of date before it is issued, since the very acts of typesetting, proofreading, printing, and binding take much time. The book catalog is inflexible; to make changes or deletions is to deface the work, an act which goes against the grain in many of us. Additions present a larger problem, which cannot

be solved simply by interleaving with blank pages, since the rational sequence is eventually destroyed. Book catalogs, like all books, have the tendency to be purloined or, euphemistically, borrowed unofficially. Pages may be removed, and normal wear and tear may be a major problem, as we are now aware from the appearance of volume 1 of the *Cumulated Index Medicus*. Since the book catalog is out-of-date, a supplementary tool must be used to find out what has happened since the book went to the printer. We shall consider some of these book catalog extensions or solutions shortly. In today's catalogs produced by photographic methods, an optimal size type for ease of reading and mental well-being is repeatedly ignored. That the volumes may be heavy and oversize, like the *British Museum Catalog* or the *Cumulated Index Medicus,* tends to create problems with their binding, as well as difficulties in handling. When one volume of a book catalog is in use for a long time, the reader has effectively removed a large portion of the library's resources from the perusal of others, although with a Xerox 914 this need not be as serious a problem as it once was. Finally, it is easy to lose one's place in reading or transcribing information from a page with many entries.

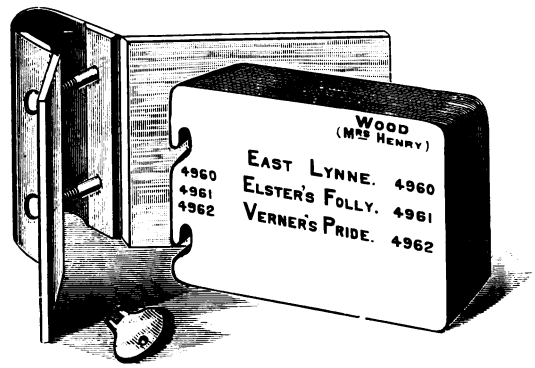
On the other hand, the card catalog is constantly up-to-date, and it is extremely flexible. We can insert new entries at will, in any fashion we devise. The only limitation on the number of entries and the depth of analysis in which we may indulge is the number of card trays available. A card catalog wears well and resists mutilation. Generally speaking, the loss of a single card from the catalog is not as serious as the loss of a page from a book catalog. Changes are easy to make, and mistakes easy to correct. In using a card tray, the researcher has removed only a small portion of the catalog from the reach of others and probably for a shorter time than if he had a volume of a book catalog. When copying data from a single card, we are less liable to err than in copying from a printed page with many entries. Finally, tradition, which may or may not remain inviolable, is in favor of the card catalog. This preference is especially interesting, since the card catalog has been in existence for so short a time.

The card catalog, however, also has its disadvantages. It is impractical to make multiple copies of a card catalog, although to keep up an existing duplicate catalog is little more work than must be expended on the original. Only one title may be seen at a time, and the catalog must be consulted within a narrowly defined area; it also occupies a large amount of space in the library. It would be interesting to determine whether the space the card catalog occupies grows in relation to the size of the library on an arithmetic or a geometric basis. The catalog must be housed in expensive card cabinets, costing approximately 11 to 15 dollars a tray for

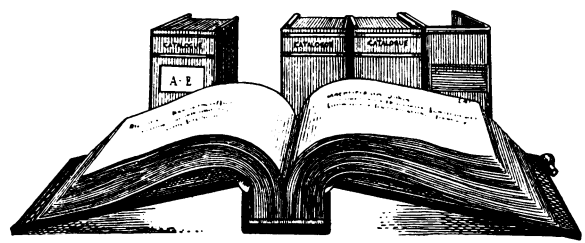
ready-made ones. It is awkward for many persons to use at the same time, although the partial portability of the card catalog helps to minimize this disadvantage. Should a tray become completely disarranged, a major refiling job ensues, the librarian's nightmare, and there are intriguing hazards created when the floor above the library houses a laboratory or an electron microscope. Finally, it is difficult to locate errors in filing, although serendipity is often helpful in this case. These factors not withstanding, the card catalog has become as much a fixture of the library as the circulation desk.

One of the purposes of this paper is to compare the two techniques of making catalogs, and we must briefly examine the schemes which were tried to keep the book catalog abreast of the library's acquisitions. The methods were many, and most will be familiar and thus will not need elaboration. Supplements of some kind were obviously needed, and these could be created in book form, if the library were affluent, or in card form. Either of these methods had the same disadvantage; it forced the user to search subsidiary alphabets. The library could have the entire catalog reprinted in a cumulative edition, but this soon returned the user to the supplement problem and was a very expensive undertaking. Many libraries have taken to publishing current awareness sheets in the form of acquisitions lists, and others have published catalogs of parts of the collection or of special collections. At the turn of the century the brief catalog enjoyed a short vogue among librarians who, although realizing that the card catalog solved many of their most pressing problems, still felt that some sort of printed catalog was desirable. They accordingly published brief or condensed catalogs which were author lists with locations of the books.

Charles C. Jewett's plan for producing a book catalog was far more ingenious than any of the above. Since many libraries purchased the same materials, Jewett reasoned that if duplication of work could be eliminated among libraries the book catalog might remain viable. He, therefore, proposed to prepare stereotype plates for each title. The plates would be stored at the Smithsonian Institution, where Jewett was Librarian and where all the printing would be undertaken. A library desiring a printed catalog would pay the Smithsonian for the assembly of the appropriate plates and the printing costs, thus saving all composition and correction costs, except for the unique titles which it presented. All of this proposal depended on the adoption of standardized rules for cataloging among the participating libraries. The plan was doomed to failure for a variety of reasons, the main one being technological. It is interesting to observe, however, that the idea did not die and is very much in evidence today in the Library of Congress printed card



Brown's "Adjustable Catalogue-Holder."



Adjustable Sheaf Catalogue. Locked.

FIG. 4.—One of the many types of adjustable or "loose leaf" catalogs which tried to bridge the gap between the book and card systems and take advantage of the benefits of both.

plan. The same basic principle is embodied here, that is, the nonduplication of existing work, but, instead of paying to have a book catalog printed, the library pays to buy sets of cards. Each plan in its way provides a custom-made catalog.

The sheaf catalog was predicated on the notion that the flexibility of a loose-leaf manuscript or typewritten catalog was preferable to the inflexibility of a bound printed one. Any librarian who has spent a few minutes adding the latest issues of *Modern Concepts of Cardiovascular Disease* to its binder or has added pages to the Prior publications is familiar with its principle. A loose-leaf binder with any one of various types of post mechanism was used to hold the pages (see Fig. 4). These could be removed at random for the addition of new or the correction of old entries. Since there were not many items to a page, alphabetization did not suffer, and new sheets could be made up to maintain the order. In effect, it was a card catalog in a binder, but without the idea of a unit record.

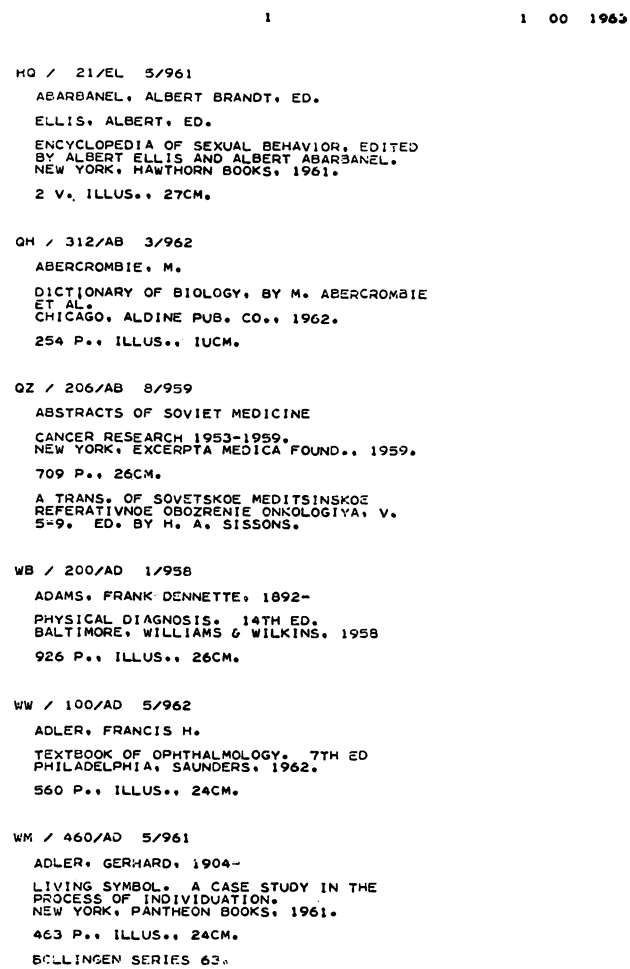
Finally, it is worth mentioning one last attempt to wed book and card catalog principles, developed by Alexander Rudolph. Called the Rudolph Indexer, the machine consisted of pressboard panels chained together in a loop. The panels passed over a hexagonal drum and appeared under a glass window when moved by turning a crank at the side of the machine. Each panel contained 35 entries, and the machine was made up of a bank of five chains, so that at each turn 175 entries came into view. It is unclear whether the five panels were able to be moved independently, but we may suppose that they were not. This scheme, which failed, had the advantage of presenting many entries to the viewer at once and also of being kept current to some extent by changing the cards on the panels. It failed because it was subject to most of the disadvantages of both the book and card catalog.

It may be seen that the greatest stumbling block in these systems was the inadequate technology of the various periods in which they were attempted. But if we reach a stage where technology is able to achieve the goals we have set, and if the problems created by the technology are of smaller magnitude than the ones it solves, then we may achieve at least a workable system. With the postwar development of computers, we have been presented with such technology; now let us see what it can do for us.

If we examine the advantages and disadvantages of computerized catalogs, we find not only many problems solved, but also some new benefits.

Let us assume that the costs of producing a computerized catalog and a card catalog are comparable. The computer catalog may be updated at any time, and a new print-out is available as often as necessary or desirable. Multiple copies can be created directly on the computer by using carbon paper forms, or, if more than a limited number of copies is required, offset or mimeograph masters can be printed directly, or the normal print-out can be converted to printing masters easily by Xerography or other photographic methods. The input costs are nonrecurring for each item, and, once the information is recorded, it can be manipulated in almost any fashion the librarian can contrive, depending on the skill of the programmer. This manipulation capability makes the production of a union list and its correction a practical and easy task; special catalogs may be created, or statistical surveys made; the acquisitions department in a university can easily ascertain how much is being spent on each or any subject area; etc. These are wondrous boons.

On the other side of the coin, however, there are some drawbacks. Unless it is a large library and can justify a computer of its own, the library loses direct control over its catalog. The library may have to wait



1 1 00 1963

QH / 21/EL 5/961

ABARBANEL, ALBERT BRANDT, ED.

ELLIS, ALBERT, ED.

ENCYCLOPEDIA OF SEXUAL BEHAVIOR, EDITED BY ALBERT ELLIS AND ALBERT ABARBANEL. NEW YORK, HAWTHORN BOOKS, 1961.

2 V., ILLUS., 27CM.

QH / 312/AB 3/962

ABERCROMBIE, M.

DICTIONARY OF BIOLOGY, BY M. ABERCROMBIE ET AL. CHICAGO, ALDINE PUB. CO., 1962.

254 P., ILLUS., 18CM.

QZ / 206/AB 8/959

ABSTRACTS OF SOVIET MEDICINE

CANCER RESEARCH 1953-1959. NEW YORK, EXCERPTA MEDICA FOUND., 1959.

709 P., 26CM.

A TRANS. OF SOVETSKOE MEDITSINSKOE REFERATIVNOE OBOZRENIE ONKOLOGIYA, V. 5-9. ED. BY H. A. SISSONS.

WB / 200/AD 1/958

ADAMS, FRANK DENNETTE, 1892-

PHYSICAL DIAGNOSIS. 14TH ED. BALTIMORE, WILLIAMS & WILKINS, 1958

926 P., ILLUS., 26CM.

WW / 100/AD 5/962

ADLER, FRANCIS H.

TEXTBOOK OF OPHTHALMOLOGY. 7TH ED PHILADELPHIA, SAUNDERS, 1962.

560 P., ILLUS., 24CM.

WM / 460/AD 5/961

ADLER, GERHARD, 1904-

LIVING SYMBOL. A CASE STUDY IN THE PROCESS OF INDIVIDUATION. NEW YORK, PANTHEON BOOKS, 1961.

463 P., ILLUS., 24CM.

BOLLINGEN SERIES 63.

FIG. 5.—A page from the catalog of the University of New Mexico Library of the Health Sciences. Produced by computer, this catalog takes advantage of the new technology to produce the copy, but casts it in the format familiar to most users of a card catalog.

its turn in the use of computer equipment, rather than have immediate access to the machine. Then, too, magnetic tape is more susceptible to destruction than either the card catalog or the book catalog, and, since the print-out is in book form, we have some of the disadvantages from which it suffers. Since machines are most efficient when doing repetitive work or handling vast quantities of data rapidly, the small library may find that, no matter how good the technology, the computerized catalog is impractical, and it can do better, or as well, by maintaining its manual

PAGE A 13

CONWAY HM 551.5 CO C
WEATHER HANDBOOK CONWAY PUB 1963
COOKE NM & MARKUS J R621.3803 CO O
ELECTRONICS & NUCLEONICS DICTIONARY MCGRAW HILL 1960
COOLIDGE JL 519.1 * CO C
INTRODUCTION TO MATHEMATICAL PROBABILITY DOVER PUB 1962
COOMBS WE 692. CO C
CONSTRUCTION ACCOUNTING & FINANCIAL MANAGEMENT FW DODGE 1958
COOPER JD 658.39 CO C
HOW TO COMMUNICATE POLICIES & INSTRUCTIONS BNA 1960
COPPOCK JC 338.1 COP C
NORTH ATLANTIC POLICY THE AGRICULTURAL GAP TWENT CENT FUND 1963
▷ COPSON DA 664.8 CO U
MICROWAVE HEATING AVI PUB 1962
▷ COPSON HR & LAQUE FL 620.1122 LA C
CORROSION RESISTANCE OF METALS & ALLOYS 2 ED REINHOLD 1963 /ACS
MONOGRAPH 158/
COREY ER 658.8 CORE C
INDUSTRIAL MARKETING PRENTICE HALL 1962
COTTON FA 512.86 CO C
CHEMICAL APPLICATIONS OF GROUP THEORY INTERSCIENCE 1963
COX EB 658.1145 CO C
TRENDS IN THE DISTRIBUTION OF STOCK OWNERSHIP PENNSYLVANIA U 1963
CRISP RD 658.8 CR C
MARKETING RESEARCH MCGRAW HILL 1957
CRISP RD 658.8 CRS C
SALES PLANNING & CONTROL MCGRAW HILL 1961
CROSFIELD LTD R338.4766 CRC C
CAUSTIC SODA & CHLORINE IN THE SOVIET UNION CROSFIELD 1959 /EAST
EUROPEAN CHEM IND 2/
CROSFIELD LTD R338.4766 CRCO C
COST & PRODUCT DISTRIBUTION IN THE HUNGARIAN CHEMICAL INDUSTRY
CROSFIELD 1962 /EAST EUROPEAN CHEM IND 8/
CROSFIELD LTD R338.4766 CRE C
EASTERN GERMANY CROSFIELD 1959 /EAST EUROPEAN CHEM IND 3/
CROSFIELD LTD R338.4766 CR C
HUNGARY CROSFIELD 1958 /EAST EUROPEAN CHEM IND 1/
CROSFIELD LTD R338.4766 CRP C
POLANDS TRADE IN CHEMICALS 1958 CROSFIELD 1963 /EAST EUROPEAN CHEM
IND 9/
CROSFIELD LTD R338.4766 CRS C
SOVIET UNIONS CHEMICAL EXPORTS 1955- 1959 CROSFIELD 1960 /EAST
EUROPEAN CHEM IND 4/
CROSFIELD LTD R338.4766 CRSO C
SOVIET UNIONS CHEMICAL IMPORTS 1955- 1959 CROSFIELD 1961 /EAST
EUROPEAN CHEM IND 5/
CROSFIELD LTD R338.4766 CRSV C
SOVIET UNIONS CHEMICAL TRADE 1959-1960 CROSFIELD 1962 /EAST EUROPEAN
CHEM IND 7/
CROSFIELD LTD R338.4766 CRT C
TECHNICAL PROGRESS & ECONOMICS IN THE SOVIET NITROGEN INDUSTRY
CROSFIELD 1961 /EAST EUROPEAN CHEM IND 6/
CROSS PC & ALLEN HC 535.842 AL C
MOLECULAR VIBROTORS WILEY 1963
CROSSWELL CM 658.22 CR C
INTERNATIONAL BUSINESS TECHNIQUES LEGAL & FINANCIAL ASPECTS OCEANA
PUB 1963

FIG. 6.—A computer-produced catalog prepared by the Information Center of the Monsanto Company in St. Louis. Here the format is rearranged to take advantage of the width of the page.

methods. Finally, we come back to the great human bug-a-boo, that tradition now favors the card catalog.

Before summing up, we can examine a few examples of computer-produced catalogs to see what is currently being done, particularly in regard to different approaches to the problem of format determination. The first example is a page from the catalog of the University of New Mexico Library of the Health Sciences (see Fig. 5). This catalog is a good one with which to start, since it maintains much similarity to those which are familiar to us. It appears that everything needed is given, and

371.3
T461
Integrated teaching materials, how to choose, create, and use them.
Thomas, Robert Murray.
Integrated teaching materials, how to choose, create, and use them, by R. Murray Thomas ₍and₎ Sherwin G. Swartout. Rev. and enl. impression. New York, David McKay Co., 1963.
530 p. illus. 28 cm.

610.736
H425
Interacting with patients.
Hays, Joyce Samhammer.
Interacting with patients ₍by₎ Joyce Samhammer Hays ₍and₎ Kenneth H. Larson. New York, Macmillan ₍1963₎
222 p. 24 cm.
Includes bibliography.

R
352.058
M 966
International city managers' association
The Municipal year book; an authoritative résumé of activities and statistical data of American cities. 1934–
Chicago, International city managers' association, 1934–
v. 26 cm.
Editors: 1934– C. E. Ridley, O. F. Nolting.

728.5
E56
Interiors book of hotels & motor hotels.
End, Henry, 1915–
Interiors book of hotels & motor hotels. With an introd. by Lawson A. Odde. New York, Whitney Library of Design ₍1963₎
x, 252 p. illus. (part col.) plans. 32 cm.
Bibliography: p. 245–246.

550
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Principles of general psychology ₍by₎ Gregory A. Kimble and Norman Garmezy. 2d ed. New York, Ronald Press Co. ₍1963₎
655 p. illus. 26 cm.

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K52
King, Alice Gore.
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212 p. illus. 21 cm.
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FIG. 7.—The Library of the St. Louis Junior College District has turned to book catalogs in order to solve the problem of providing multiple lists of its holdings for the various branches of the College. This catalog is produced by photographing LC cards. For each edition of the book catalog, the entire card catalog must be rephotographed.

TABLE I

DOES MODERN TECHNOLOGY ENABLE US TO OBTAIN THE BEST FEATURES OF BOTH BOOK AND CARD CATALOGS?

Features of Book or Card Catalogs	Computer Catalog		
	Yes	No	Maybe
Some Advantages:			
1. Constantly up-to-date	X		
2. Flexible—new entries inserted at anytime	X		
3. Limitless cross-references and entries possible	X		
4. Changes easy to make	X		
5. Mistakes easy to correct	X		
6. Multiple copies practical	X		
7. Readable	X	X	X
8. Photocopyable	X		
9. Errors easy to find	X		
10. Cost within reach			X
11. Subcatalogs easy to create	X		
12. One-time cost per item for entry	X		
Some Disadvantages:			
13. Space and cabinets required		X	
14. Susceptible to mutilation and theft			X
15. Volumes unwieldy due to weight and size			X
16. Inconvenient for many users simultaneously			X
17. Reworking data for subcatalogs needed		X	

one may ask whether more is included than is necessary, since it records size in centimeters and the fact that a book is illustrated. (A recent article describes this catalog (2).)

A second catalog is one from the Monsanto Company Technical Information Center (see Fig. 6). This is a union catalog for all branch libraries and gives location information in addition to the bibliographic data. The three traditional approaches are used: author, title, and subject. Aside from some truncated entries which may prove bothersome, the catalog is neat and easy to read, as was the previous example.

A third example is a book catalog produced by IBM (not illustrated). The main difference is that this is a KWIC, or Keyword-In-Context, index. Consequently, one finds the subject (keyword) approach presented first. In the bibliography section, the complete citation is given, and, finally, in the third portion or author index one finds the author's name and an identifying code number. This type of catalog is rapidly created by machines with minimal amounts of editorial work required. The main problem is that the columns have been photoreduced and

have become harder to read, though still twice as big as some columns in the *Science Citation Index*, where there are four to a page.

These three examples are of computer-produced catalogs, but other ways exist of producing a book catalog, using a step-and-repeat camera. The *Index Medicus* used such methods during 1960–63, employing a Kodak Listomatic camera, which photographed IBM cards. One does not even have to use IBM cards, but can photograph existing catalog cards. An example is a divided book catalog created for the St. Louis Junior College District, using a machine called the Compos-O-List (see Fig. 7). Shown is the author-title section. The Compos-O-List has been set to leave off the bottom of the card, thus getting a few more entries onto a page and making a neater format. This is a good, serviceable way to make a catalog, and, if it is not especially beautiful, it has the advantages of book form and speed of production.

With both computer and camera produced catalogs, where updating is required we are back where we started, issuing supplements and eventually cumulating them.

To summarize, let us look at the main advantages of the book catalog and the card catalog and see what the computer has achieved (see Table I).

After examining the three columns, it appears that we are in a position really to benefit from the improved technology which now is available. We have gained most of the advantages, have minimized a few of the disadvantages, and, indeed, can look forward like Dr. Pangloss to a computer produced catalog which will be the best possible one, in this best of all possible worlds.

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